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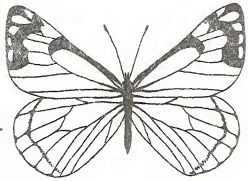

INSECT AND DISEASE REPORT

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SURVEY AND EVALUATION OF PARK AND STREET TREES IN GREAT FALLS, MONTANA

by

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SUMMARY

Insect and disease activity on shade trees within the city of Great Falls, Montana was evaluated. Although several insects have caused damage, the tree decline following the severe drought of 1969 was found to be the main concern. No evidence of Dutch elm disease 1/ was found. Recommendations on tree maintenance, removal, and replacement are provided, as well as control measures for insect pests.

INTRODUCTION

The evaluation of street and park trees, including the municipal golf course was conducted July 14-16. The evaluation was requested by Tom Sullivan, City Park Superintendent. We were assisted by Roger Harris of the Park Department, and Tim Murphy, Helena Office of the Division of Forestry.

METHODS

Major parks and portions of the golf course were walked. The remainder of the parks and golf course were driven. Streets were driven systematically. Stops were made when insect or disease damage was observed or abnormally appearing trees were noted.

1/ Scientific names of pests and host trees are listed in the Appendix.

RESULTS

Tree Districts 1, 2, and 3

1. Considerable branch dieback, particularly in the American elm and green ash, resulting from lack of moisture due to the 1969 drought.

2. Light to moderate defoliation on American elm and green ash from forest tent caterpillar.

3. Light to moderate to heavy leaf curling and leaf damage to American elm from woolly elm aphid.

4. A leaf-rolling moth on American elm and green ash.

5. Trunk and large limb damage by carpenterworm and ash borer; mainly to green ash, American and Siberian elm. Many trees affected.

6. A scale insect, European fruit lecanium, on American elm.

Tree Districts 4 and 5

1. Branch dieback from 1969 drought not as heavy.

2. Some light defoliation of green ash and American elm by forest tent caterpillar.

3. A few green ash and American elm with carpenterworm damage.

4. Moderate to heavy leaf damage to American elm from woolly elm aphid.

5. A leaf-rolling moth on American elm and green ash.

Tree District 6

1. Light to moderate leaf damage to American elm from woolly elm aphid.

2. A leaf-rolling moth on American elm and green ash.

3. Anthracnose disease on green ash.

Lyons Park

Trees are young and appear vigorous. Little insect activity.

Memorial Park

1. Woolly elm aphid on American elm.

2. A leaf-rolling moth on American elm and green ash.

3. Forest tent caterpillar on green ash and American elm.

Golf Course

1. Branch dieback in rough areas due to insufficient water.

2. Woolly elm aphid on American elm.

Gibson Park

1. Woolly elm aphid on American elm.

2. Carpenterworm damage to American elm.

DISCUSSION

The chief problem affecting the appearance and vigor of trees in Great Falls is branch dieback as a result of the 1969 drought. Dead branches from this dieback remain in many trees throughout the city.

Leaf damage from defoliation by forest tent caterpillar and a leaf-rolling moth, and leaf curling from woolly elm aphid feeding, pose no serious threat of tree mortality at current population levels as the trees refoliate each year. The injury from these insects affects the appearance, as well as the growth of the affected trees.

Boring activity by carpenterworm and ash borer in trunks and branches weakens the trees and makes them more susceptible to wind and snow breakage. Severe infestations can kill the tree. Effort should be made to keep numbers of these borers at levels where damage will be minimal.

Dutch elm disease was not detected in Great Falls during the evaluation, but it is expected that American elms will be affected in the near future. There have been several confirmed occurrences in Missoula, and some suspected cases in Billings. If and when Dutch elm disease occurs in Great Falls, it could have a severe impact because of the large number of American elms in the city.

RECOMMENDATIONS

Tree Maintenance

1. Make a concentrated effort to cover the city as soon as possible, and remove all dead branches and tops larger than two inches in diameter. Repeat this operation on a yearly basis.

2. Remove broken branches and tops caused by heavy snow and storm, or other damage, as they occur.

3. Prevent basal wounds caused by mower and other grounds maintenance operations in parks and on the golf course.

4. Use wound dressing on all pruning scars and basal wounds larger than two inches.

Tree Removal

1. Gradually remove all inferior species of trees, such as white poplar, cottonwood, and boxelder.

2. Remove all trees with obvious heart rot or weakened trunks.

3. Remove all dead trees promptly.

Tree Replacement

1. Trees to use:

Norway maple	Engelmann spruce
Sugar maple	Subalpine fir
Basswood	Ponderosa pine
Green ash	Lodgepole pine
Bur oak	Silver maple
Mountain ash	Aspen
Douglasfir	

2. Trees to avoid:

Cottonwood	Siberian elm
White poplar	Russian olive
Boxelder	Weeping birch
American elm	

Chemical Control of Insects

Chemical control recommendations are subject to change based on registration review by both the State of Montana and the U. S. Environmental Protection Agency. Recommendations in the appendix are the most current, as to the date of this report. For future applications, consult with the Montana Division of Forestry for any changes in recommendations.

APPENDIX

Scientific Names of Pests and Host Trees

PESTS

Dutch elm disease	*Ceratocystis ulmi*
Forest Tent caterpillar	*Malacosoma disstria*
Woolly elm aphid	*Eriosoma americanum*
Leaf-rolling moth	(not identified to species)
Carpenterworm	*Prionoxystus robiniae*
Ash borer	*Podosesia syringae fraxini*
European fruit lecanium	*Lecanium corni*
Anthracnose disease	*Gloeosporium aridum*

TREES

Engelmann spruce	*Picea engelmannii*
Blue spruce	*Picea pungens*
Douglasfir	*Pseudotsuga menziesii*
Mountain ash	*Sorbus sitchensis*
Green ash	*Fraxinus pennsylvanica*
American elm	*Ulmus americanum*
Siberian elm	*Ulmus pumila*
Subalpine fir	*Abies lasiocarpa*
Weeping birch	*Betula pendula*
White poplar	*Populus alba*
Cottonwood	*Populus trichocarpa*
Boxelder	*Acer negundo*
Norway maple	*Acer platanoides*
Sugar maple	*Acer saccharum*
Silver maple	*Acer saccharinum*
Aspen	*Populus tremuloides*
Basswood	*Tilia americana*
Bur oak	*Quercus macrocarpa*
Russian olive	*Elaeagnus angustifolia*
Ponderosa pine	*Pinus ponderosa*
Lodgepole pine	*Pinus contorta*

Prevention and Applied Control Measures to Reduce Damage by Carpenterworm & Ash Borer

Control is similar for both insects. A desirable control program should consist of a combination of preventive and applied measures as follows:

PREVENTION

1. Avoid wounding trees. When wounds occur at the base from cultural practices or on the upper trunk from pruning, etc., cover the wound areas with a commercial tree dressing or a suitable water-base paint to eliminate them as desirable egg-laying sites.

2. Remove and destroy "brood" trees before June. Brood trees are those damaged beyond recovery and still heavily infested. Trees which show severe damage to trunks, but which no longer appear to be infested, may be saved and will give additional years of service. If the wound areas are cleaned out and treated, and if good growth conditions are provided, new wood will gradually restore the vigor of the trees.

APPLIED CONTROL

1. Trapping the moths--where only one or two infested trees are involved and the possibility of reinfestation from outside sources is small. In mid-May, to prevent moths from emerging from burrows and laying eggs, lightly wrap the areas on the trunk and branches where borer openings occur. Remove the wrapping about mid-August. Repeat the treatment for at least three years to insure that all adults developing from caterpillars in the trees have been destroyed.

2. Killing the caterpillars--can be used for small trees, particularly green ash, lightly infested with borers. These can be recognized by the appearance of moist frass at burrow openings in May and June. Carefully, dig out the insects with a pointed knife or kill the caterpillars by probing the burrows with a wire. Repeat the probing operation at frequent intervals as long as new frass is being ejected. Treat the wound areas with commercial tree dressing or water base paint after the insects have been killed.

3. Injecting an effective poison into the larval burrows to destroy the caterpillars--A fumigant can be made by dissolving a spoonful of paradichlorobenzene (moth crystals) in a small amount of carbon disulfide. A commercial borer paste such as Borotox 2/ can be injected into burrows and the openings sealed.

Chemical Control of Forest Tent Caterpillar

DIAZINON 2/

Use formulation of 4 lbs. active ingredient per gallon. Dilute the formulation at 3 pints per 100 gallons of water. Thoroughly wet foliage when spraying. Time spray application so that caterpillars are in the first three instars (after bud-break when leaves are about one-half grown).

SEVIN 2/

Use formulation of 80% wettable powder. Mix 1.25 lb. of fromulation with 100 gallons of water. Thoroughly wet foliage. Time application so that caterpillars are in the first three instars (after bud-break when leaves are about one-half grown).

Chemical Control of Woolly Elm Aphid

DIAZINON 2/

The same application as listed under forest tent caterpillar should give satisfactory control. A second application in approximately 14 days may be necessary.

MALATHION 2/

Follow directions on the label for control of aphids on ornamentals and shade trees.

2/ The use of trade names is for information purposes and does not imply endorsement by the Montana Division of Forestry or the USDA, Forest Service.